

Remarks

Entry of the foregoing and reconsideration of the application identified in caption as amended, pursuant to and consistent with the Rules of Practice in Patent Cases, and in light of the remarks which follow, is respectfully requested.

Claims 1-19 and 24 are pending in the present application with method claims 20-23 being canceled as directed to a non-elected invention.

Claim 1 has been amended to recite a "solid flexible dental polymer film" to more particularly point out the present invention. The present amendment to claim 1 finds support in numerous places throughout the specification as set forth below and accordingly, no new matter has been presented.

More specifically, page 17, lines 1-10, describes the making and handling of a flexible polymer film of the present invention and further cutting of the polymer film to the desired dimensions. From this description it is clear that the claimed film is solid and can not be a liquid. Moreover, the way the term "film" is used in the specification would clearly exclude such a definition. A person of ordinary skill in the art reading the specification would understand based upon the context with which the term "film" is used that applicants mean the term to be construed in accordance with its ordinary and customary usage, such as a solid membrane which would necessarily exclude liquid materials or a liquid film.

A common dictionary defines "film" as "a thin skin or membrane"; "a thin covering or coating". The way term is used in the specification is consistent with describing the film as a solid membrane and not a liquid film. Page 11, lines 14-16, and lines 31-32, state that the film is preferably coated on the side facing the tooth surface. Page 12, lines 25-30, state that the polymer film has elasticity and plastic formability. Page 13, lines 1-21, state that the film can have several layers and can take the form of pre-produced oval film pieces, which are directly applied to the tooth, temporarily held with a dental instrument and finally cured. Page 14, lines 16-21, describe the invention as a flexible polymer film that can be fit to the tooth surface. Page 15, lines 1-21, describe the film being fitted to the tooth surface by shaping. Thus, the specification describes the film as a solid flexible material which due to its handling requirements can not take the form of a liquid film. For example, during use the solid polymerized film is sufficiently flexible to allow shaping around a tooth. The film contains groups capable of further polymerization with the film, and when further

polymerized the groups are contained to a sufficient extent to cause the film to harden to a covering which adheres to the tooth and is no longer pliable.

Applicants submit that the present invention is novel and unobvious over the prior art. As set forth on page 4, starting at line 12 of the specification, the present invention is directed to a polymer film which has been polymerized containing monomers in the film still capable of further polymerization. Pages 4 and 5 set forth several methods to fabricate the film from starting materials to an incomplete polymerization with monomers remaining or to a complete polymerization with the later introduction of monomers. Either way, the polymerized film is in an intermediate state and due to its flexibility the solid material can be easily formed around the tooth surfaces. Once set in place, the film is cured by further polymerization of the monomers to its final hardened state. As set forth on page 10, starting at line 23, suitable polymerization inhibitors are contained in the polymer film to prevent premature polymerization of the polymerizable groups present prior to the final polymerisation. This ensures that the film is sufficiently pliable during storage and use during fitting. The invention is practiced, for example, in accordance with the methods set forth on page 15, starting at line 8, in which the polymer film is applied to the tooth surface, fitted by shaping and then the polymerizable groups of the thus applied and fitted polymer film are further polymerized to completion.

The dental polymer film is a solid polymerized film sufficiently flexible to allow shaping around a tooth, which contains groups within the film capable of further polymerization with the film, and when further polymerized these groups are contained to a sufficient extent to cause the film to harden to a covering which adheres to the tooth and is no longer pliable.

Claims 1-6 and 8-13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,191,191 to Harada et al. ("Harada"). This rejection is respectfully traversed.

Harada discloses a polymerizable composition for dental use which includes polymerizable groups in the composition. The dental polymerizable composition can be applied to a tooth and polymerized. The compositions of Harada are preferably provided in a multi-package form including two packages (column 11, lines 6 to 29). During use the components are mixed and applied to the cavity to be filled (column 13, lines 31 to 34). It is evident that the materials of Harada do not have the form of solid flexible polymer films

which can be hardened by further polymerization. Thus, it does not appear that the composition when applied to a tooth prior to polymerization, can be characterized as a solid flexible polymer film.

Moreover, the Harada materials include specific initiator systems for radical polymerization (column 2, line 66 to column 3, line 12). Cured products made from these polymerizable compositions are said to have only a small thickness of unpolymerized layer on the surface (column 3, lines 13 to 15). Such unpolymerized or smear layers are caused by the presence of oxygen which acts as a polymerization inhibitor. Although these layers are unpolymerized, they are not polymerizable since polymerization is inhibited by oxygen. These layers are undesirable and are usually removed by the dentist after hardening of the material (compare column 13, lines 13 to 16). Accordingly, Harada fails to disclose or suggest a solid flexible film containing polymerizable monomers which can be applied as a solid flexible film and later be cured to a hardened product after application of the film. The present invention is not anticipated or rendered obvious by this document for at least the reasons noted above.

Withdrawal of the record rejection of claims 1-6 and 8-13 under 35 U.S.C. § 102(b) as being anticipated by Harada and allowance of said claims is respectfully requested.

Claims 1-6, 8-13, 16, 17, 19, and 24 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,355,704 to Nakatsuka et al. ("Nakatsuka"). This rejection is respectfully traversed.

Nakatsuka discloses a bonding composition suitable for dental use including a primer composed of a polymerizable monomer containing an ethylenic unsaturated group, a solvent, and an adhesive composition containing a first and second polymerizable monomer initiator, which are packaged separately. The adhesives include two compositions, an adhesive primer and a bonding agent (column 4, line 64 to page 5, line 4). As disclosed therein, the bonding composition is applied to the cavity formed in a tooth and cured. These compositions are separately applied to the tooth and are then hardened by polymerization (compare for example column 23, lines 28 to 52). Prior to hardening these compositions are liquid, after curing they do not include any polymerizable groups. Again, it does not appear that the Nakatsuka composition when applied to a tooth prior to polymerization can be characterized as a solid flexible film. Accordingly, solid flexible polymeric films including polymerizable

groups are not disclosed. The present invention is not anticipated or rendered obvious by this document for at least the reasons noted above.

Withdrawal of the record rejection of claims 1-6, 8-13, 16, 17, 19, and 24 under 35 U.S.C. § 102(e) as being anticipated by Nakatsuka and allowance of said claims is respectfully requested.

Claims 1-9 and 11-15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,154,762 to Mitra et al. ("Mitra"). This rejection is respectfully traversed.

Mitra discloses a dental cement containing polymerizable components which have three curing modes (column 2, lines 6 to 7) which are formulated in two parts, e.g. in the form of a powder portion and a liquid portion (column 2, lines 38 to 46). The cement contains water, acid-reactive filler, water-miscible acidic polymer, an ethylenically-unsaturated moiety, photoinitiator, water-soluble reducing agent, and water-soluble oxidizing agent. The cement composition can be applied to the teeth and cured in a variety of ways. Again, it does not appear that the composition when applied to a tooth prior to polymerization can be characterized as a solid flexible film. Accordingly, these formulations do not have the form of solid flexible polymeric films and when hardened the materials do not contain any polymerizable groups. The present invention is not anticipated or rendered obvious by this document for at least the reasons noted above.

Withdrawal of the record rejection of claims 1-9 and 11-15 under 35 U.S.C. § 102(b) as being anticipated by Mitra and allowance of said claims is respectfully requested.

Claims 1, 2, 4, 17, and 18 stand rejected under 35 U.S.C. § 102(a) as being anticipated by WO 01/93774 to Karazivan. This rejection is respectfully traversed.

WO 01/93774 to Karazivan corresponds to U.S. Published Patent Application No. 2004/0063075. This document discloses an applicator for the application of a sealant to dental surfaces (page 1, paragraph [0007]). The sealing agent can be cured and adhered to the surface of tooth. This device includes a closed surface which may be made of a plastic material capable of plastic or elastic deformation (claim 28). Preferably, the closed surface is made of Mylar® (claim 54), a polymeric film produced by DuPont [0062]. It follows that this document discloses the use of typical polymer films which do not include polymerizable groups. The sealing agent which is applied to the tooth is a polymerizable material such as a dental adhesive, dental cement etc. (page 2, paragraph [0050], which does not have the form of a solid flexible polymer film. According to our understanding of this procedure, a mold is

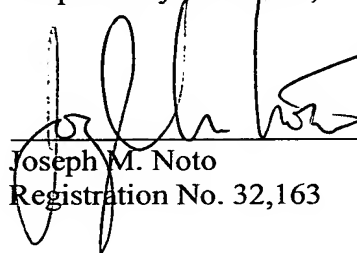
formed by the dental surface to be treated and the closed surface of the device. The mold is then be filled with the sealing agent (see page 3, paragraph [0059]).

In contrast, the present invention is a solid flexible polymer film which material can be directly used for coating a tooth surface without requiring a device, as disclosed by Karazivan. Consequently, the present invention is not anticipated or rendered obvious by this document for at least the reasons noted above.

Withdrawal of the record rejection of claims 1, 2, 4, 17, and 18 under 35 U.S.C. § 102(a) as being anticipated by Karazivan and allowance of said claims is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is hereby earnestly solicited.

Respectfully submitted,



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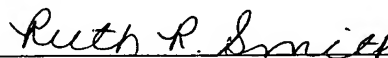
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Ruth R. Smith